

Report from the Airplane Performance Harmonization Working Group

Issue: Miscellaneous Amendments to the General and Applicability rules sections

Rule Sections: §§ 121.171, 121.173, 135.361, and 135.363/JAR-OPS 1.470, 1.475, 1.480, 1.485

1 - What is underlying safety issue to be addressed by the FAR/JAR? [Explain the underlying safety rationale for the requirement. Why should the requirement exist? What prompted this rulemaking activity (e.g., new technology, service history, etc.)?]

These FAR paragraphs prescribe the applicability of and general requirements relating to Subpart I, “ Airplane Performance Operating Limitations,” of Parts 121 and 135. These paragraphs also contain definitions for the terms, “effective length of the runway” and “obstruction clearance plane,” which are used in several places in Subpart I.

Subpart I of Parts 121 and 135 contains the performance operating limitations applicable to all airplanes operated under the terms of those parts, including reciprocating-engine-powered, turbo-propeller-powered, and other turbine-engine-powered airplanes. There are different operating limitations that apply to each class of airplane, and it is the purpose of §§ 121.171, 121.173, 135.361, and 135.363 to identify the limitations corresponding to each. Also, §§ 121.173(d) and 135.363(f) require the use of the performance data in the Airplane Flight Manual for determining compliance with the performance operating limitations of Subpart I for transport category airplanes.

The rulemaking proposal contained in this working group report originated from a task to harmonize the performance operating limitations of FAR Parts 121 and 135 with those of JAR-OPS 1.

2 - What are the current FAR and JAR standards relative to this subject? [Reproduce the FAR and JAR rules text as indicated below.]

Current FAR text:

Part 121

§ 121.171 Applicability.

- (a) This subpart prescribes airplane performance operating limitations for all certificate holders.
- (b) For purposes of this part, *effective length of the runway* for landing means the distance from the point at which the obstruction clearance plane associated with the approach end of the runway intersects the centerline of the runway to the far end thereof.

- (c) For the purposes of this subpart, *obstruction clearance plane* means a plane sloping upward from the runway at a slope of 1:20 to the horizontal, and tangent to or clearing all obstructions within a specified area surrounding the runway as shown in a profile view of that area. In the plan view, the centerline of the specified area coincides with the centerline of the runway, beginning at the point where the obstruction clearance plane intersects the centerline of the runway and proceeding to a point at least 1,500 feet from the beginning point. Thereafter the centerline coincides with the takeoff path over the ground for the runway (in the case of takeoffs) or with the instrument approach counterpart (for landings), or, where the applicable one of these paths has not been established, it proceeds consistent with turns of at least 4,000 foot radius until a point is reached beyond which the obstruction clearance plane clears all obstructions. This area extends laterally 200 feet on each side of the centerline at the point where the obstruction clearance plane intersects the runway and continues at this width to the end of the runway; then it increases uniformly to 500 feet on each side of the centerline at a point 1,500 feet from the intersection of the obstruction clearance plane with the runway; thereafter it extends laterally 500 feet on each side of the centerline.

§ 121.173 General.

(a) Except as provided in paragraph (c) of this section, each certificate holder operating a reciprocating-engine-powered airplane shall comply with §§ 121.175 through 121.187.

(b) Except as provided in paragraph (c) of this section, each certificate holder operating a turbine-engine-powered airplane shall comply with the applicable provisions of §§ 121.189 through 121.197, except that when it operates--

(1) A turbo-propeller-powered airplane type certificated after August 29, 1959, but previously type certificated with the same number of reciprocating engines, the certificate holder may comply with §§ 121.175 through 121.187; or

(2) Until December 20, 2010, a turbo-propeller-powered airplane described in § 121.157(f), the certificate holder may comply with the applicable performance requirements of appendix K of this part.

(c) Each certificate holder operating a large nontransport category airplane type certificated before January 1, 1965, shall comply with §§ 121.199 through 121.205 and any determination of compliance must be based only on approved performance data.

(d) The performance data in the Airplane Flight Manual applies in determining compliance with §§ 121.175 through 121.197. Where conditions are different from those on which the performance data is based, compliance is determined by interpolation or by computing the effects of changes in the specific variables if the results of the interpolation or computations are substantially as accurate as the results of direct tests.

(e) Except as provided in paragraph (c) of this section, no person may take off a reciprocating-engine-powered airplane at a weight that is more than the allowable weight for the runway being used (determined under the runway takeoff limitations of the transport category operating rules of 14 CFR part 121, subpart I) after taking into account the temperature operating correction factors in the applicable Airplane Flight Manual.

(f) The Administrator may authorize in the operations specifications deviations from the requirements in the subpart if special circumstances make a literal observance of a requirement unnecessary for safety.

(g) The ten-mile width specified in §§ 121.179 through 121.183 may be reduced to five miles, for not more than 20 miles, when operating VFR or where navigation facilities furnish reliable and accurate identification of high ground and obstructions located outside of five miles, but within ten miles, on each side of the intended track.

Part 135

§ 135.361 Applicability.

(a) This subpart prescribes airplane performance operating limitations for all certificate holders.

(b) For purposes of this part, *effective length of the runway* for landing means the distance from the point at which the obstruction clearance plane associated with the approach end of the runway intersects the centerline of the runway to the far end thereof.

(c) For the purposes of this subpart, *obstruction clearance plane* means a plane sloping upward from the runway at a slope of 1:20 to the horizontal, and tangent to or clearing all obstructions within a specified area surrounding the runway as shown in a profile view of that area. In the plan view, the centerline of the specified area coincides with the centerline of the runway, beginning at the point where the obstruction clearance plane intersects the centerline of the runway and proceeding to a point at least 1,500 feet from the beginning point. Thereafter the centerline coincides with the takeoff path over the ground for the runway (in the case of takeoffs) or with the instrument approach counterpart (for landings), or, where the applicable one of these paths has not been established, it proceeds consistent with turns of at least 4,000 foot radius until a point is reached beyond which the obstruction clearance plane clears all obstructions. This area extends laterally 200 feet on each side of the centerline at the point where the obstruction clearance plane intersects the runway and continues at this width to the end of the runway; then it increases uniformly to 500 feet on each side of the centerline at a point 1,500 feet from the intersection of the obstruction clearance plane with the runway; thereafter it extends laterally 500 feet on each side of the centerline.

§ 135.363 General.

- (a) Each certificate holder operating a reciprocating engine powered large transport category airplane shall comply with §§ 135.365 through 135.377.
- (b) Each certificate holder operating a turbine engine powered large transport category airplane shall comply with the applicable provisions of §§ 135.379 through 135.387, except that when it operates a turbopropeller-powered large transport category airplane certificated after August 29, 1959, but previously type certificated with the same number of reciprocating engines, it may comply with §§ 135.365 through 135.377.
- (c) Each certificate holder operating a large nontransport category airplane shall comply with §§ 135.389 through 135.395 and any determination of compliance must be based only on approved performance data. For the purpose of this subpart, a large nontransport category airplane is an airplane that was type certificated before July 1, 1942.
- (d) Each certificate holder operating a small transport category airplane type shall comply with § 135.397.
- (e) Each certificate holder operating a small nontransport category airplane type shall comply with § 135.399.
- (f) The performance data in the Airplane Flight Manual applies in determining compliance with §§ 135.365 through 135.387. Where conditions are different from those on which the performance data is based, compliance is determined by interpolation or by computing the effects of changes in the specific variables if the results of the interpolation or computations are substantially as accurate as the results of direct tests.
- (g) No person may take off a reciprocating engine powered large transport category airplane at a weight that is more than the allowable weight for the runway being used (determined under the runway takeoff limitations of the transport category operating rules of this subpart) after taking into account the temperature operating correction factors in section 4a.749a-T or section 4b.117 of the Civil Air Regulations in effect on January 31, 1965, and in the applicable Airplane Flight Manual.
- (h) The Administrator may authorize in the operations specifications deviations from the requirements in the subpart if special circumstances make a literal observance of a requirement unnecessary for safety.
- (i) The ten-mile width specified in §§ 135.369 through 135.373 may be reduced to five miles, for not more than 20 miles, when operating VFR or where navigation facilities furnish reliable and accurate identification of high ground and obstructions located outside of five miles, but within ten miles, on each side of the intended track.
- (j) Each certificate holder operating a commuter category airplane shall comply with § 135.398.

Current JAR text:

JAR-OPS 1.470 Applicability

(a) An operator shall ensure that multi-engine aeroplanes powered by turbopropeller engines with a maximum approved passenger seating configuration of more than 9 or a maximum take-off mass exceeding 5700 kg and all multi-engine turbojet powered aeroplanes are operated in accordance with Subpart G (Performance Class A).

(b) An operator shall ensure that propeller driven aeroplanes with a maximum approved passenger seating configuration of 9 or less, and a maximum take-off mass of 5700 kg or less are operated in accordance with Subpart H (Performance Class B).

(c) An operator shall ensure that aeroplanes powered by reciprocating engines with a maximum approved passenger seating configuration of more than 9 or a maximum take-off mass exceeding 5700 kg are operated in accordance with Subpart I (Performance Class C).

(d) Where full compliance with the requirements of the appropriate Subpart cannot be shown due to specific design characteristics (e.g. supersonic aeroplanes or seaplanes), the operator shall apply approved performance standards that ensure a level of safety equivalent to that of the appropriate Subpart.

(e) Multi-engine aeroplanes powered by turbopropeller engines with a maximum approved passenger seating configuration of more than 9 and with a maximum take-off mass of 5700 kg or less may be permitted by the Authority to operate under alternative operating limitations to those of Performance Class A which shall not be less restrictive than those of the relevant requirements of Subpart H.

(f) The provisions of subparagraph (e) above will expire on 1 April 2000.

JAR-OPS 1.475 General

(a) An operator shall ensure that the mass of the aeroplane:

(1) At the start of the takeoff;

or, in the event of in-flight replanning

(2) At the point from which the revised operational flight plan applies,

is not greater than the mass at which the requirements of the appropriate Subpart can be complied with for the flight to be undertaken, allowing for expected reductions in mass as

the flight proceeds, and for such fuel jettisoning as is provided for in the particular requirement.

(b) An operator shall ensure that the approved performance data contained in the Aeroplane Flight Manual is used to determine compliance with the requirements of the appropriate Subpart, supplemented as necessary with other data acceptable to the Authority as prescribed in the relevant Subpart. When applying the factors prescribed in the appropriate Subpart, account may be taken of any operational factors already incorporated in the Aeroplane Flight Manual performance data to avoid double application of factors. (See AMC OPS 1.475(b) & IEM OPS 1.475(b)).

(c) When showing compliance with the requirements of the appropriate Subpart, due account shall be taken of aeroplane configuration, environmental conditions and the operation of systems which have an adverse effect on performance.

(d) For performance purposes, a damp runway, other than a grass runway, may be considered to be dry.

JAR-OPS 1.480 Terminology

(a) Terms used in Subparts F, G, H, I and J, and not defined in JAR-1, have the following meaning:

(1) *Accelerate-stop distance available (ASDA)*. The length of the take-off run available plus the length of stopway, if such stopway is declared available by the appropriate Authority and is capable of bearing the mass of the aeroplane under the prevailing operating conditions.

(2) *Contaminated runway*. A runway is considered to be contaminated when more than 25% of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by the following:

(i) Surface water more than 3 mm (0.125 in) deep, or by slush, or loose snow, equivalent to more than 3 mm (0.125 in) of water;

(ii) Snow which has been compressed into a solid mass which resists further compression and will hold together or break into lumps if picked up (compacted snow); or

(iii) Ice, including wet ice.

(3) *Damp runway*. A runway is considered damp when the surface is not dry, but when the moisture on it does not give it a shiny appearance.

- (4) *Dry runway*. A dry runway is one which is neither wet nor contaminated, and includes those paved runways which have been specially prepared with grooves or porous pavement and maintained to retain 'effectively dry' braking action even when moisture is present.
 - (5) *Landing distance available (LDA)*. The length of the runway which is declared available by the appropriate Authority and is suitable for the ground run of an aeroplane landing.
 - (6) *Maximum approved passenger seating configuration*. The maximum passenger seating capacity of an individual aeroplane, excluding pilot seats or flight deck seats and cabin crew seats as applicable, used by the operator, approved by the Authority and specified in the Operations Manual
 - (7) *Take-off distance available (TODA)*. The length of the take-off run available plus the length of the clearway available if such clearway is declared available by the appropriate Authority.
 - (8) *Take-off mass*. The take-off mass of the aeroplane shall be taken to be its mass, including everything and everyone carried at the commencement of the take-off run.
 - (9) *Take-off run available (TORA)*. The length of runway which is declared available by the appropriate Authority and suitable for the ground run of an aeroplane taking off.
 - (10) *Wet runway*. A runway is considered wet when the runway surface is covered with water, or equivalent, less than specified in subparagraph (a)(2) above or when there is sufficient moisture on the runway surface to cause it to appear reflective, but without significant areas of standing water.
- (b) The terms 'accelerate-stop distance', 'take-off distance', 'take-off run', 'net take-off flight path', 'one engine inoperative en-route net flight path' and 'two engines inoperative en-route net flight path' as relating to the aeroplane have their meanings defined in the airworthiness requirements under which the aeroplane was certificated, or as specified by the Authority if it finds that definition inadequate for showing compliance with the performance operating limitations.

JAR-OPS 1.485 General

- (a) An operator shall ensure that, for determining compliance with the requirements of this subpart, the approved performance data in the Aeroplane Flight Manual is supplemented as necessary with other data acceptable to the Authority if the approved performance data in the Aeroplane Flight Manual is insufficient in respect of items such as:

(1) Accounting for reasonably expected adverse operating conditions such as take-off and landing on contaminated runways; and

(2) Consideration of engine failure in all flight phases.

(b) An operator shall ensure that for the wet and contaminated runway case, performance data determined in accordance with JAR 25X1591 or equivalent acceptable to the Authority is used. (See IEM OPS 1.485(b)).

2a – If no FAR or JAR standard exists, what means have been used to ensure this safety issue is addressed? [Reproduce text from issue papers, special conditions, policy, certification action items, etc., that have been used relative to this issue]

N/A

3 - What are the differences in the FAA and JAA standards or policy and what do these differences result in? [Explain the differences in the standards or policy, and what these differences result in relative to (as applicable) design features/capability, safety margins, cost, stringency, etc.]

There are no differences between the FAA and JAA standards relative to the applicability of the performance operating limitations for turbine engine powered airplanes that are required to be operated under JAR-OPS 1 and FAR Part 121 or 135. The JAA applicability standards are contained in the JAR paragraph on applicability, while the FAA applicability standards are contained in the paragraph on general requirements.

As part of the general requirements, the JAA standards specifically state that the mass (weight) limits imposed by the performance requirements must be complied with at the start of the takeoff, or if in-flight replanning is used, at the point from which the revised flight plan applies. Although the FAA standards of Part 121 are the same, this issue is addressed differently. The standards of Part 135 are different in that the issue of flight replanning is not addressed. Each performance operating limitation in both Parts 121 and 135 states, “No person...may take off that airplane at a weight greater than...,” which is considered to be equivalent to the JAR-OPS 1 requirement that the applicable weight limitation must be met at the start of the takeoff. Section 121.631(c) specifies that, if the flight plan is amended, the appropriate subpart I performance limitations must be met at the time of amendment.

Both standards require the approved performance data contained in the Airplane Flight Manual (AFM) to be used to show compliance with the performance operating limitations. However, JAR-OPS 1 recognizes that the AFM may not contain all of the information needed to show compliance with some of the JAR-OPS 1 requirements. In that case, data found acceptable to the regulatory authority may be used to supplement the AFM. The FAA standards do not address the issue of supplementary data.

The JAA standards also note that the operator may take account of any operational factors required by the JAR-OPS 1 performance limitations that are already incorporated in the AFM in order to avoid applying the factors twice. Although the FAA standard is the same, i.e., there is no intent to require double application of the operating factors, neither Part 121 nor Part 135 contain the statement currently in JAR-OPS 1.

JAR-OPS 1 requires “due account” to be taken of any configuration, environmental condition, or system that has an adverse effect on performance. The FAA addresses these issues during the type certification process by ensuring that the performance limitations in the AFM contain such information. Since this information is included as part of the airplane operating limitations, operators are obliged to use it.

JAR-OPS 1.475(d) allows, for performance purposes, a damp runway (other than a grass runway), to be considered dry. In general, the FAA does not allow a damp runway to be considered equivalent to a dry runway for performance purposes. This policy is stated in FAA Order 8400.10, “Air Transportation Operations Inspector’s Handbook,” paragraph 921A: “Any runway which is not dry [or contaminated] is considered to be wet. Standing water, puddles, or continuous rain are not necessary for a runway to be considered wet. Runway braking friction can change when there is a light drizzle. In some cases, even dew or frost which changes the color of a runway will result in a significant change in runway friction...Some newly-surfaced asphalt runway surfaces can be extremely slippery when only slightly wet.” In some cases, the FAA has allowed damp, grooved runways at the destination airport to be considered dry for the purposes of complying with the landing limitations of §§ 121.195 and 135.385.

JAR-OPS 1 contains definitions for numerous terms that are used in the performance requirements, but are not defined in JAR-1. Other than the term “wet runway,” these terms are not used in the FAA standards, and hence are not defined in FAR Parts 121 or 135. For terms that are common to the type certification standards (e.g., JAR-25 and FAR Part 25), both JAR-OPS 1 and FAR Parts 121 and 135 state that the applicable definitions are those defined in the airworthiness requirements under which the airplane was certificated. However, JAR-OPS1 allows the regulatory authority to specify an appropriate definition if it is determined that the definition from the applicable airworthiness requirement is inadequate for showing compliance with the performance operating limitations.

The FAA standards contain definitions for the terms, “effective length of the runway” and “obstruction clearance plane,” which are used in various subpart I operating limitations associated with landing distance. JAR-OPS 1 does not use these terms, and therefore definitions are not provided in the JAR standard.

JAR-OPS 1 requires the operator to ensure that performance data used to show compliance with the wet and contaminated runway performance operating limitations is determined in accordance with a JAR methodology specified in the rule, or its equivalent.

Since the FAA standards do not contain operating limitations for wet and contaminated runways, this requirement is not contained in FAR Parts 121 and 135.

The FAA standards allow the Administrator to authorize deviations from the subpart I requirements if special circumstances make a literal observance of a requirement unnecessary for safety. JAR-OPS 1 only allows temporary exemptions to be granted when the regulatory authority is satisfied that there is a need and the operator complies with any supplementary condition the authority considers necessary in order to ensure an acceptable level of safety. There are not thought to be any deviations allowed by the FAA that result in any significant harmonization issues.

4 - What, if any, are the differences in the current means of compliance? [Provide a brief explanation of any differences in the current compliance criteria or methodology (e.g., issue papers), including any differences in either criteria, methodology, or application that result in a difference in stringency between the standards.]

These rule sections set forth the applicability and general requirements associated with the performance operating requirements. There are no specific means of compliance issues associated with them.

5 – What is the proposed action? [Describe the new proposed requirement, or the proposed change to the existing requirement, as applicable. Is the proposed action to introduce a new standard, or to take some other action? Explain what action is being proposed (not the regulatory text, but the underlying rationale) and why that direction was chosen for each proposed action.]

The proposed action is to harmonize the sections of these requirements that have an effect on the working group's task of harmonization of the JAR-OPS 1 performance requirements with those of FAR Parts 121 and 135.

For each proposed change from the existing standard, answer the following questions:

6 - What should the harmonized standard be? [Insert the proposed text of the harmonized standard here]

The proposed amended FAR Parts 121, 135, and JAR-OPS 1 standards are shown below. A description of each proposed change follows the proposed regulatory text.

FAR Part 121

§ 121.171 Applicability.

(a) This subpart prescribes airplane performance operating limitations for all certificate holders.

(b) Except as provided in paragraph (d) of this section, each certificate holder operating a reciprocating-engine-powered airplane shall comply with §§ 121.175 through 121.187.

(c) Except as provided in paragraph (d) of this section, each certificate holder operating a turbine-engine-powered airplane shall comply with the applicable provisions of §§ 121.189 through 121.197, except that when it operates--

(1) A turbo-propeller-powered airplane type certificated after August 29, 1959, but previously type certificated with the same number of reciprocating engines, the certificate holder may comply with §§ 121.175 through 121.187; or

(2) Until December 20, 2010, a turbo-propeller-powered airplane described in § 121.157(f), the certificate holder may comply with the applicable performance requirements of appendix K of this part.

(d) Each certificate holder operating a large nontransport category airplane type certificated before January 1, 1965, shall comply with §§ 121.199 through 121.205 and any determination of compliance must be based only on approved performance data.

§ 121.173 General.

(a) The performance data in the Airplane Flight Manual, supplemented as necessary with other data acceptable to the Administrator, applies in determining compliance with §§ 121.175 through 121.197. Where conditions are different from those on which the performance data is based, compliance is determined by interpolation or by computing the effects of changes in the specific variables if the results of the interpolation or computations are substantially as accurate as the results of direct tests.

(b) When applying the operational factors required by the applicable provisions of §§ 121.189 through 121.197, account may be taken of any operational factors already incorporated in the performance data to avoid double application of factors.

(c) Except as provided in § 121.171(d), no person may take off a reciprocating-engine-powered airplane at a weight that is more than the allowable weight for the runway being used (determined under the runway takeoff limitations of the transport category operating rules of 14 CFR part 121, subpart I) after taking into account the temperature operating correction factors in the applicable Airplane Flight Manual.

(d) The Administrator may authorize in the operations specifications deviations from the requirements in the subpart if special circumstances make a literal observance of a requirement unnecessary for safety.

(e) The ten-mile width specified in §§ 121.179 through 121.183 may be reduced to five miles, for not more than 20 miles, when operating VFR or where navigation facilities

furnish reliable and accurate identification of high ground and obstructions located outside of five miles, but within ten miles, on each side of the intended track.

(f) For purposes of this part, *effective length of the runway* for landing means the distance from the point at which the obstruction clearance plane associated with the approach end of the runway intersects the centerline of the runway to the far end thereof.

(g) For the purposes of this subpart, *obstruction clearance plane* means a plane sloping upward from the runway at a slope of 1:20 to the horizontal, and tangent to or clearing all obstructions within a specified area surrounding the runway as shown in a profile view of that area. In the plan view, the centerline of the specified area coincides with the centerline of the runway, beginning at the point where the obstruction clearance plane intersects the centerline of the runway and proceeding to a point at least 1,500 feet from the beginning point. Thereafter the centerline coincides with the takeoff path over the ground for the runway (in the case of takeoffs) or with the instrument approach counterpart (for landings), or, where the applicable one of these paths has not been established, it proceeds consistent with turns of at least 4,000 foot radius until a point is reached beyond which the obstruction clearance plane clears all obstructions. This area extends laterally 200 feet on each side of the centerline at the point where the obstruction clearance plane intersects the runway and continues at this width to the end of the runway; then it increases uniformly to 500 feet on each side of the centerline at a point 1,500 feet from the intersection of the obstruction clearance plane with the runway; thereafter it extends laterally 500 feet on each side of the centerline.

(h) For the purposes of showing compliance with § 121.189(e)(3), *runway surface condition* means a dry, wet, or contaminated runway in accordance with the following definitions of those terms:

(1) *Contaminated runway.* A runway is considered to be contaminated when more than 25 percent of the runway surface area (whether in isolated areas or not) within the required length and the width being used is covered by the following:

- (i) Standing water or slush more than 0.125 inches (3 mm) deep;
- (ii) Loose snow more than 0.75 inches (20 mm) deep; or
- (iii) Compacted snow or ice, including wet ice.

(2) *Dry runway.* A dry runway is one that is clear of contaminants and visible moisture within the required length and the width being used.

(3) *Wet runway.* A runway that is neither dry nor contaminated is considered wet.

(i) For the purposes of showing compliance with §§ 121.189, 121.195, and 121.197, the following definitions apply:

(1) *Accelerate-stop distance available.* The length of the takeoff run available plus the length of the available stopway.

(2) *Landing distance available.* The length of the runway that is declared available for the ground run of an airplane landing.

(3) *Takeoff distance available.* The length of the takeoff run available plus the length of the available clearway.

(4) *Takeoff run available.* The length of the runway that is declared available for the ground run of an airplane taking off.

FAR Part 135

§ 135.361 Applicability.

(a) This subpart prescribes airplane performance operating limitations for all certificate holders.

(b) Each certificate holder operating a reciprocating engine powered large transport category airplane shall comply with §§ 135.365 through 135.377.

(c) Each certificate holder operating a turbine engine powered large transport category airplane shall comply with the applicable provisions of §§ 135.379 through 135.387, except that when it operates a turbopropeller-powered large transport category airplane certificated after August 29, 1959, but previously type certificated with the same number of reciprocating engines, it may comply with §§ 135.365 through 135.377.

(d) Each certificate holder operating a large nontransport category airplane shall comply with §§ 135.389 through 135.395 and any determination of compliance must be based only on approved performance data. For the purpose of this subpart, a large nontransport category airplane is an airplane that was type certificated before July 1, 1942.

(e) Each certificate holder operating a small transport category airplane type shall comply with § 135.397.

(f) Each certificate holder operating a small nontransport category airplane type shall comply with § 135.399.

(g) Each certificate holder operating a commuter category airplane shall comply with § 135.398.

§ 135.363 General.

(a) The performance data in the Airplane Flight Manual, supplemented as necessary with other data acceptable to the Administrator, applies in determining compliance with §§ 135.365 through 135.387. Where conditions are different from those on which the performance data is based, compliance is determined by interpolation or by computing the effects of changes in the specific variables if the results of the interpolation or computations are substantially as accurate as the results of direct tests.

(b) When applying the operational factors required by the applicable provisions of §§ 135.379 through 135.387, account may be taken of any operational factors already incorporated in the performance data to avoid double application of factors.

(c) No person may take off a reciprocating-engine-powered large transport category airplane at a weight that is more than the allowable weight for the runway being used (determined under the runway takeoff limitations of the transport category operating rules of this subpart) after taking into account the temperature operating correction factors in section 4a.749a-T or section 4b.117 of the Civil Air Regulations in effect on January 31, 1965, and in the applicable Airplane Flight Manual.

(d) The Administrator may authorize in the operations specifications deviations from the requirements in the subpart if special circumstances make a literal observance of a requirement unnecessary for safety.

(e) The ten-mile width specified in §§ 135.369 through 135.373 may be reduced to five miles, for not more than 20 miles, when operating VFR or where navigation facilities furnish reliable and accurate identification of high ground and obstructions located outside of five miles, but within ten miles, on each side of the intended track.

(f) For purposes of this part, *effective length of the runway* for landing means the distance from the point at which the obstruction clearance plane associated with the approach end of the runway intersects the centerline of the runway to the far end thereof.

(g) For the purposes of this subpart, *obstruction clearance plane* means a plane sloping upward from the runway at a slope of 1:20 to the horizontal, and tangent to or clearing all obstructions within a specified area surrounding the runway as shown in a profile view of that area. In the plan view, the centerline of the specified area coincides with the centerline of the runway, beginning at the point where the obstruction clearance plane intersects the centerline of the runway and proceeding to a point at least 1,500 feet from the beginning point. Thereafter the centerline coincides with the takeoff path over the ground for the runway (in the case of takeoffs) or with the instrument approach counterpart (for landings), or, where the applicable one of these paths has not been established, it proceeds consistent with turns of at least 4,000 foot radius until a point is reached beyond which the obstruction clearance plane clears all obstructions. This area extends laterally 200 feet on each side of the centerline at the point where the obstruction clearance plane intersects the runway and continues at this width to the end of the runway; then it increases uniformly to 500 feet on each side of the centerline at a point

1,500 feet from the intersection of the obstruction clearance plane with the runway; thereafter it extends laterally 500 feet on each side of the centerline.

(h) For the purposes of showing compliance with § 135.379(e)(3), *runway surface condition* means a dry, wet, or contaminated runway in accordance with the following definitions of those terms:

(1) *Contaminated runway*. A runway is considered to be contaminated when more than 25 percent of the runway surface area (whether in isolated areas or not) within the required length and the width being used is covered by the following:

- (i) Standing water or slush more than 0.125 inches (3 mm)) deep;
- (ii) Loose snow more than 0.75 inches (20 mm) deep; or
- (iii) Compacted snow or ice, including wet ice.

(2) *Dry runway*. A dry runway is one that is clear of contaminants and visible moisture within the required length and the width being used.

(3) *Wet runway*. A runway that is neither dry nor contaminated is considered wet.

(i) For the purposes of showing compliance with §§ 135.379, 135.385, and 135.387, the following definitions apply:

(1) *Accelerate-stop distance available*. The length of the takeoff run available plus the length of the available stopway.

(2) *Landing distance available*. The length of the runway that is declared available for the ground run of an airplane landing.

(3) *Takeoff distance available*. The length of the takeoff run available plus the length of the available clearway.

(4) *Takeoff run available*. The length of the runway that is declared available for the ground run of an airplane taking off.

JAR-OPS 1

JAR-OPS 1.470 Applicability

(a) An operator shall ensure that multi-engine aeroplanes powered by turbopropeller engines with a maximum approved passenger seating configuration of more than 9 or a maximum take-off mass exceeding 5700 kg and all multi-engine turbojet powered aeroplanes are operated in accordance with Subpart G (Performance Class A).

(b) An operator shall ensure that propeller driven aeroplanes with a maximum approved passenger seating configuration of 9 or less, and a maximum take-off mass of 5700 kg or less are operated in accordance with Subpart H (Performance Class B).

(c) An operator shall ensure that aeroplanes powered by reciprocating engines with a maximum approved passenger seating configuration of more than 9 or a maximum take-off mass exceeding 5700 kg are operated in accordance with Subpart I (Performance Class C).

(d) Where full compliance with the requirements of the appropriate Subpart cannot be shown due to specific design characteristics (e.g. supersonic aeroplanes or seaplanes), the operator shall apply approved performance standards that ensure a level of safety equivalent to that of the appropriate Subpart.

(e) Multi-engine aeroplanes powered by turbopropeller engines with a maximum approved passenger seating configuration of more than 9 and with a maximum take-off mass of 5700 kg or less may be permitted by the Authority to operate under alternative operating limitations to those of Performance Class A which shall not be less restrictive than those of the relevant requirements of Subpart H.

(f) The provisions of subparagraph (e) above will expire on 1 April 2000.

JAR-OPS 1.475 General

(a) An operator shall ensure that the mass of the aeroplane:

(1) At the start of the takeoff;

or, in the event of in-flight replanning

(2) At the point from which the revised operational flight plan applies,

is not greater than the mass at which the requirements of the appropriate Subpart can be complied with for the flight to be undertaken, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is provided for in the particular requirement.

(b) An operator shall ensure that the approved performance data contained in the Aeroplane Flight Manual is used to determine compliance with the requirements of the appropriate Subpart, supplemented as necessary with other data acceptable to the Authority as prescribed in the relevant Subpart. When applying the factors prescribed in the appropriate Subpart, account may be taken of any operational factors already incorporated in the Aeroplane Flight Manual performance data to avoid double application of factors. (See AMC OPS 1.475(b) & IEM OPS 1.475(b)).

(c) When showing compliance with the requirements of the appropriate Subpart, due account shall be taken of aeroplane configuration, environmental conditions and the operation of systems which have an adverse effect on performance.

JAR-OPS 1.480 Terminology

(a) Terms used in Subparts F, G, H, I and J, and not defined in JAR-1, have the following meaning:

(1) *Accelerate-stop distance available (ASDA)*. The length of the take-off run available plus the length of stopway, if such stopway is declared available by the appropriate Authority.

(2) *Grooved or Porous Friction Course Wet Runway*. A paved runway that has been prepared with lateral grooving or a porous friction course (PFC) surface to improve braking characteristics when wet.

(3) *Landing distance available (LDA)*. The length of the runway which is declared available for the ground run of an aeroplane landing by the appropriate Authority.

(4) *Maximum approved passenger seating configuration*. The maximum passenger seating capacity of an individual aeroplane, excluding pilot seats or flight deck seats and cabin crew seats as applicable, used by the operator, approved by the Authority and specified in the Operations Manual

(5) *Runway surface condition*. The runway surface condition means the state of the surface of the runway: either dry, wet, or contaminated.

(i) *Contaminated runway*. A runway is considered to be contaminated when more than 25% of the runway surface area (whether in isolated areas or not) within the required length and the width being used is covered by the following:

(A) Standing water or slush more than 3 mm (0.125 in) deep;

(B) Loose snow more than 20 mm (0.75 in) deep; or

(C) Compacted snow or ice, including wet ice.

(ii) *Dry runway*. A dry runway is one that is clear of contaminants and visible moisture within the required length and the width being used.

(iii) *Wet runway*. A runway that is neither dry nor contaminated is considered wet.

(6) *Take-off distance available (TODA)*. The length of the take-off run available plus the length of the clearway, if such clearway is declared available by the appropriate Authority.

(7) *Take-off mass*. The take-off mass of the aeroplane shall be taken to be its mass, including everything and everyone carried at the commencement of the take-off run.

(8) *Take-off run available (TORA)*. The length of runway which is declared available for the ground run of an aeroplane taking off by the appropriate Authority.

(b) The terms ‘accelerate-stop distance’, ‘take-off distance’, ‘take-off run’, ‘net take-off flight path’, ‘one engine inoperative en-route net flight path’ and ‘two engines inoperative en-route net flight path’ as relating to the aeroplane have their meanings defined in the airworthiness requirements under which the aeroplane was certificated, or as specified by the Authority if it finds that definition unsuitable for showing compliance with the performance operating limitations.

JAR-OPS 1.485 General

(a) An operator shall ensure that, for determining compliance with the requirements of this subpart, the approved performance data in the Aeroplane Flight Manual is supplemented as necessary with other data acceptable to the Authority in respect of items such as:

(1) Accounting for reasonably expected adverse operating conditions such as take-off and landing on contaminated runways; and

(2) Consideration of engine failure in all flight phases.

(b) For the wet and contaminated runway case, performance data determined in accordance with JAR 25X1591, or other data ensuring a similar level of safety acceptable to the Authority must be used. (See IEM OPS 1.485(b)).

Summary of Proposed Changes:

(1) Re-format §§ 121 and 135 for editorial consistency. Certain of the paragraphs provided as “general” requirements in §§ 121.173 and 135.363 are applicability criteria rather than general requirements. To be consistent with the section titles, §§ 121.173(a) through (c) and 135.363(a) through (e) would be redesignated as 121.171(b) through (d) and 135.361(b) through (f), respectively. Section 135.363(j) would be redesignated 135.361(g). The existing §§ 121.171(b) and (c) and 135.361(b) and (c), which are general requirements, would be redesignated as §§ 121.173(f) and (g) and 135.363(f) and (g), respectively. The existing § 121.173(d) would be redesignated as § 121.173(a), and

§§ 121.173(e) through (g) would be redesignated as §§ 121.173(c) through (e). The existing § 135.363(f) would be redesignated as § 135.363(a), and §§ 135.363(g) through (i) would be redesignated as §§ 135.363(c) through (e). All cross-references contained in these paragraphs would be revised accordingly. These changes are editorial only and do not change the stringency or intent of the requirements.

(2) Amend §§ 121.173(a) and 135.363(a) to allow the use of supplementary data acceptable to the Administrator in addition to Airplane Flight Manual (AFM) data to be used in showing compliance to the performance requirements of §§ 121.175 through 121.197 and 135.365 through 135.387, respectively. There are a few cases currently where information needed to show compliance with the referenced performance requirements is not furnished in the AFM. For example, fuel and oil consumption data are needed to show compliance with §§ 121.191(a), 121.193(a)(2), 121.193(b)(2), 121.193(c)(2), 121.195(a), 121.195(b), and 121.197. The distance the airplane can travel in 90 minutes with all engines operating at cruising power is needed to show compliance with §§ 121.193(a)(1), 121.193(b)(1), and 121.193(c)(1). For both of these cases, this information is not provided in the AFM, but is provided by the airplane manufacturer in other documentation. Therefore, although the ability to do so is not clearly stated in the requirements, the FAA already accepts certain supplementary data to show compliance with the Parts 121/135 performance requirements.

For most of the new performance requirements being proposed by the Performance Harmonization Working Group (e.g., runway alignment distance, retroactive application of wet runway requirements, contaminated runway requirements), airplane performance data not currently furnished in AFM's will be needed in order to show compliance. While the working group recommends that the subject of AFM data requirements be further investigated by a working group tasked with such Part 25 issues, the working group recommends proceeding with this rulemaking without waiting for that task to be completed. Until that task is completed, operators should be able to show compliance using supplementary data acceptable to the regulatory authority.

The ability to use supplementary data should not be construed as allowing the use of such data in lieu of AFM data. If AFM data exists that is applicable and suitable for use in showing compliance, then it must be used (although it can be reformatted in accordance with § 121.141(b)). Supplementary data is defined as data not currently furnished in AFM's that is needed to show compliance with the operating rules. It typically refers to the set of data used to show compliance with the applicable requirements, but also encompasses the processes and methods used to produce it.

This proposed requirement does not increase or reduce the requirements regarding information that must be furnished in the AFM. Information that was formerly required to be in the AFM must still be provided in the AFM, including appendices or supplements that may be added at a later date.

Supplementary data includes data provided by the airplane manufacturer, developed by the operator, developed by a third party, or any other source acceptable to the Administrator. The primary difference between AFM data and supplementary data is the process for its approval (for AFM data) or acceptance (for supplementary data). AFM data undergoes a formal approval process involving the cognizant FAA Aircraft Certification Office (ACO), including signature authority delegated to the Manager of the Flight Test Branch of that office. Supplementary data can be reviewed and accepted by the operator's assigned FAA Principle Operations Inspector. The inspector can use whatever resources needed to review the data for acceptability, including requesting assistance from the ACO. Acceptance of the data may be accomplished through various means, including by letter, verbally, or by taking no action, which indicates there is no FAA objection to use of the data.

Further guidance regarding the use and acceptance of supplementary data will be provided in a proposed Advisory Circular. This guidance will include examples of the types of supplementary data the working group expects to be needed to comply with the proposed new requirements and criteria for acceptance of those data. In general, since the proposed new requirements result from harmonization with JAR-OPS 1, supplementary data used to show compliance with JAR-OPS 1 would be accepted for showing compliance with the proposed new requirements.

(3) Add a new requirement, § 121.173(b)/§ 135.363(b), to clarify that factors required by the operating requirements do not need to be applied if they are already included in the applicable AFM data. This proposal is a clarifying amendment to harmonize with a similar requirement provided in JAR-OPS 1. It is in accordance with standard practice and has no safety impact. However, this proposed clarification would be beneficial in that depending on the certification basis of the airplane, factors proposed to be required by the operating rules may or may not already be included in the AFM data. For example, part 25 requires factors to be applied to headwinds and tailwinds in the AFM takeoff data. Part 23 does not require these factors to be applied. Proposed new §§ 121.189(e)(5) and 135.379(e)(5) would require any airplane operated under those sections to use factored headwinds and tailwinds for determining takeoff performance. Since the factors are already required by part 25, an operator of a part 25 airplane need not apply additional factors.

(4) Add, as a new § 121.173(h)/§ 135.363(h), definitions for runway surface condition. Definitions of dry, wet, and contaminated runways would be added to be used with the proposed new requirement to take into account the runway surface condition (dry, wet, or contaminated) in §§ 121.189(e)(3) and 135.379(e)(3). A contaminated runway would be defined as one that has more than 25 percent of its surface area within the required length and the width being used covered by standing water or slush more than 0.125 inches deep, loose snow more than 0.75 inches deep, or compacted snow or ice, included wet ice of any depth. A dry runway would be defined as a runway that is clear of contaminants and visible moisture. A runway that is not clear of contaminants or visible moisture, but with less than the amounts of standing water, slush, snow, or ice that

would require the runway to be considered contaminated would be considered wet for the purposes of this subpart.

The reference to the “required length and the width being used” is intended to restrict the determination of whether a runway is wet or contaminated to the takeoff run and accelerate stop distances and widths required to comply with the takeoff limitations. It is recognized that there are no specific FAA or JAA airplane airworthiness or operating standards pertaining to minimum runway width that must be available for an airplane taking off. The airworthiness standards provide for a maximum 30 foot deviation from the runway centerline after a sudden engine failure during takeoff when establishing the minimum control speed on the ground (V_{MCG}). Other factors, such as airplane size, crosswinds, and runway conditions also come into play in determining the minimum safe runway width. The 30 foot deviation allowed in determining V_{MCG} added to the offset of the landing gear/tires from the runway centerline, including an allowance for an initial misalignment, constitutes a standard for a minimum safe runway width that has been used in special conditions associated with approval for airplane operations on narrow runways. Such an approach may also be applicable to determining “the runway width being used” as referenced in §§ 121.173(h) and 135.363(h).

Runway area beyond that which is required to show compliance with the takeoff limitations need not be considered in making this determination. Draft FAA Advisory Circular (AC) 91-6B (unreleased) advises that when the contaminant is located in the high speed portion of the takeoff roll, the runway should be considered contaminated, regardless of whether it amounts to 25 percent of the runway surface being used. Although this revision to AC 91-6A was never released, this guidance remains good advice and should be contained in any advisory material developed in connection with the contaminated runway takeoff limitations recommended by working group reports 4 and 5.

The dry runway definition is not intended to address contaminants other than snow, slush, water, or ice, such as rubber deposits. That is, the presence of other contaminants, such as rubber deposits, would not require an otherwise dry runway to be considered wet for the purposes showing compliance with the requirements of subpart I. Also, it is not intended to require runways with small isolated damp patches or water puddles in non-critical areas to be considered wet.

(5) Add, as new §§ 121.173(i) and § 135.363(i), definitions for the terms, “accelerate-stop distance available,” “landing distance available,” “takeoff distance available,” and “takeoff run available.” These terms would be used in proposed amendments to the takeoff and landing limitations associated with runway length considerations in §§ 121.189, 121.195, and 121.197, and 135.379, 135.385, and 135.387. The definitions for these terms would in each case prescribe the length of the runway that can be used to show compliance with the applicable takeoff or landing limitation. The limitations would relate the runway length available for showing compliance with the particular limitation to the distance needed under the particular conditions, as provided in the Airplane Flight Manual.

The introduction and use of these terms would harmonize the FAR and JAR standards. There would be no change to the stringency or intent of the standards, so there would not be any effect on the level of safety.

(6) Remove JAR 1.475(d). JAR 1.475(d), which allows a damp runway (but not a grass runway) to be treated as dry for performance purposes, would be removed. This change would harmonise with the FAA practice of not permitting a damp runway to be considered equivalent to a dry runway for performance purposes. Research conducted by the FAA and the National Aeronautics and Space Administration shows that a damp runway does not provide an equivalent braking surface as a dry runway.

Research results comparing braking coefficients on dry, wet, and damp surfaces are provided in the FAA Final Report for Project 308-3X (Amendment No. 1), “Vehicular Measurements of Effective Runway Friction,” published in May 1962, NASA Technical Note D-8332, “Behavior of Aircraft Antiskid Braking Systems on Dry and Wet Runway Surfaces,” published in December 1976, and NASA Technical Paper 2917, “Evaluation of Two Transport Aircraft and Several Ground Test Vehicle Friction Measurements Obtained for Various Runway Surface Types and Condition,” published in February 1990.

The conclusion provided in the FAA Report for Project 308-3X typifies the results shown by the data in the other reports: “The absolute values of friction coefficient between the low reflective surface (damp) and high reflective surface (wet), where there were no large areas of measurable standing water, were approximately the same.” This conclusion is echoed in Engineering Sciences Data Unit Item Number 25, paragraph 5.2.2, which states, “In damp conditions, with the exception of surfaces such as I in Figure 7 [which is a surface with an open macro-texture and harsh micro-texture, such as a grooved or porous friction course surface], the coefficient of friction is noticeably reduced from the dry surface value, the effect becoming most marked on surfaces such as IV in Figure 7 [which is a closed macro-texture, smooth micro-texture surface].”

(7) Amend JAR 1.480(a) to use the definitions for runway surface conditions proposed for FAR 121.173(h) and 135.363(h) and add a definition for a grooved or porous friction course wet runway. The existing definitions of dry, wet, and contaminated runway definitions would be replaced by the definitions proposed for §§ 121.173(h) and 135.363(h) as discussed above. This would harmonise the FAR and JAR definitions for these types of runway surface conditions, which is necessary to ensure a harmonised application of the wet and contaminated runway standards proposed in working group report 2 and either of reports 4 or 5.

This change would also remove the JAR-OPS 1 provision to allow specially prepared grooved or porous runways from being considered dry even when moisture is present. Aeroplane performance on grooved and porous friction course runways is specifically addressed in the airworthiness standards of JAR-25. Instead of implying an aeroplane

performance capability, which is better addressed through JAR-25, the proposed standard would add a definition for a grooved or porous friction course wet runway. This definition would state that a grooved or porous friction course wet runway is a runway that has been prepared with lateral grooving or a porous friction course (PFC) surface to improve braking characteristics when wet.

JAR-OPS 1.480(a) would be reformatted as necessary to include the changes proposed above. In addition, minor editorial changes would be made to the definitions of accelerate-stop distance available, landing distance available, takeoff distance available, and takeoff run available in that the distances declared available by the appropriate Authority are always assumed to be suitable for the intended use.

(8) Replace the word “inadequate” in JAR OPS 1.480(b) with the word “unsuitable.” JAR OPS 1.480(b) currently requires that the meanings of certain terms used in the type certification of the aeroplane be used in the same manner when showing compliance with the JAR OPS 1 performance operating limitations, unless that definition is found to be inadequate. The proposed change recognises that a definition used in type certification may be adequate for use in showing compliance with JAR OPS 1, but it might not be suitable.

(9) Amend JAR OPS 1.485(a) to remove the words, “...if the approved performance Data in the Aeroplane Flight Manual is insufficient.” These words, which are intended to indicate when supplementary data are to be used, are unnecessary. The current wording, “supplemented as necessary” already conveys the need to supplement data when AFM data are insufficient to show compliance with the JAR OPS 1 performance operating limitations.

(10) Amend JAR OPS 1.485(b) to revise the requirement for the operator to ensure that the performance data for wet and contaminated runways was determined in accordance with JAR 25 X 1591, or an acceptable equivalent method. These data are normally developed by the aeroplane manufacturer, and the operator typically does not have the means to independently ensure that a method acceptable to the Authority was used. JAR OPS 1.485(b) would be revised to state that for the wet and contaminated runway case, performance data determined in accordance with JAR 25X1591, or other data ensuring a similar level of safety acceptable to the Authority must be used.

7 - How does this proposed standard address the underlying safety issue (identified under #1)? [Explain how the proposed standard ensures that the underlying safety issue is taken care of.]

The proposed standard continues to address the underlying safety issue in the same manner. The changes reflected in the proposed standard are consistent with the changes proposed by the Airplane Performance Harmonization Working Group for the performance operating limitations.

8 - Relative to the current FAR, does the proposed standard increase, decrease, or maintain the same level of safety? Explain. [Explain how each element of the proposed change to the standards affects the level of safety relative to the current FAR. It is possible that some portions of the proposal may reduce the level of safety even though the proposal as a whole may increase the level of safety.]

The proposed standard maintains the same level of safety relative to the current FAR. The reformatting for editorial consistency would have no impact on the actual requirements, and therefore would not affect safety. The proposal to allow the use of data supplementary to the Airplane Flight Manual only applies to cases where such supplementary data are already used, or for showing compliance with additional requirements being proposed elsewhere. The proposal to clarify that factors required by the operating requirements do not need to be applied if they are already included in the applicable AFM data codifies existing practice and has no safety impact. The proposed definitions of dry, wet, and contaminated runways do not, in themselves affect the level of safety. The additional requirements for which these definitions would apply are proposed elsewhere.

9 - Relative to current industry practice, does the proposed standard increase, decrease, or maintain the same level of safety? Explain. [Since industry practice may be different than what is required by the FAR (e.g., general industry practice may be more restrictive), explain how each element of the proposed change to the standards affects the level of safety relative to current industry practice. Explain whether current industry practice is in compliance with the proposed standard.]

The proposed standard maintains the same level of safety relative to current industry practice for the same reasons noted in the response to item 8.

10 - What other options have been considered and why were they not selected? [Explain what other options were considered, and why they were not selected (e.g., cost/benefit, unacceptable decrease in the level of safety, lack of consensus, etc.) Include the pros and cons associated with each alternative.]

The alternatives would be to harmonize on the current FAR standard or retain the current non-harmonized standards. The proposal updates, clarifies, and harmonizes the FAR with the JAR.

11 - Who would be affected by the proposed change? [Identify the parties that would be materially affected by the rule change – airplane manufacturers, airplane operators, etc.]

Operators, manufacturers, and other parties who engage in the development of operational performance data for transport category airplanes could be affected by the proposed change. For the additional requirements proposed elsewhere, the potential for use of data supplementary to the Airplane Flight Manual could reduce the burden associated with producing and using such data. Airplane Flight Manual data typically costs more to produce and use because it must be specifically approved as part of the type certification process, and usually must meet specific formatting guidelines.

12 - To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) needs to be included in the rule text or preamble? [Does any existing advisory material include substantive requirements that should be contained in the regulation? This may occur because the regulation itself is vague, or if the advisory material is interpreted as providing the only acceptable means of compliance.]

None.

13 - Is existing FAA advisory material adequate? If not, what advisory material should be adopted? [Indicate whether the existing advisory material (if any) is adequate. If the current advisory material is not adequate, indicate whether the existing material should be revised, or new material provided. Also, either insert the text of the proposed advisory material here, or summarize the information it will contain, and indicate what form it will be in (e.g., Advisory Circular, policy, Order, etc.)]

Further guidance regarding the use and acceptance of supplementary data would be provided in a proposed Advisory Circular. This guidance would include examples of the types of supplementary data the working group expects to be needed to comply with the proposed new requirements and criteria for acceptance of those data. In general, since the proposed new requirements result from harmonization with JAR-OPS 1, supplementary data used to show compliance with JAR-OPS 1 would be accepted for showing compliance with the proposed new requirements.

14 - How does the proposed standard compare to the current ICAO standard? [Indicate whether the proposed standard complies with or does not comply with the applicable ICAO standards (if any)]

ICAO Annex 6- Part 1, 5.2.5 states, “A flight shall not be commenced unless the performance information provided in the flight manual indicates that the standards of 5.2.6 to 5.2.11 can be complied with for the flight to be undertaken.” Paragraph 5.2.6 requires that the condition of the runway (i.e., the presence of water, slush, or ice) be taken into account in determining the maximum takeoff weight for the flight.

The proposed standard would represent a difference from the ICAO standards in that it would allow data supplementary to the Airplane Flight Manual to be used to show compliance with certain operating limitations, including those associated with the maximum takeoff weight on a contaminated runway. The current standards are also different from the ICAO standards in that the FAR does not currently have specific requirements for operators to take into account the effect of contaminated runways.

15 - Does the proposed standard affect other HWGs? [Indicate whether the proposed standard should be reviewed by other harmonization working groups and why]

No.

16 - What is the cost impact of complying with the proposed standard? [Please provide information that will assist in estimating the change in cost (either positive or negative) of the proposed rule. For example, if new tests or designs are required, what is known with respect to the testing or

engineering costs? If new equipment is required, what can be reported relative to purchase, installation, and maintenance costs? In contrast, if the proposed rule relieves industry of testing or other costs, please provide any known estimate of costs.]

There are no cost impacts associated with this proposal by itself. The cost impacts associated with the additional requirements being proposed elsewhere are dealt with in the applicable working group reports.

17 - If advisory or interpretive material is to be submitted, document the advisory or interpretive guidelines. If disagreement exists, document the disagreement.

N/A

18 - Does the HWG wish to answer any supplementary questions specific to this project? [If the HWG can think of customized questions or concerns relevant to this project, please present the questions and the HWG answers and comments here.

No.

19 – Does the HWG want to review the draft NPRM prior to publication in the Federal Register?

Yes.